https://aka.ms/vso-online

VISUAL STUDIO
CODESPACES

@rorypreddy
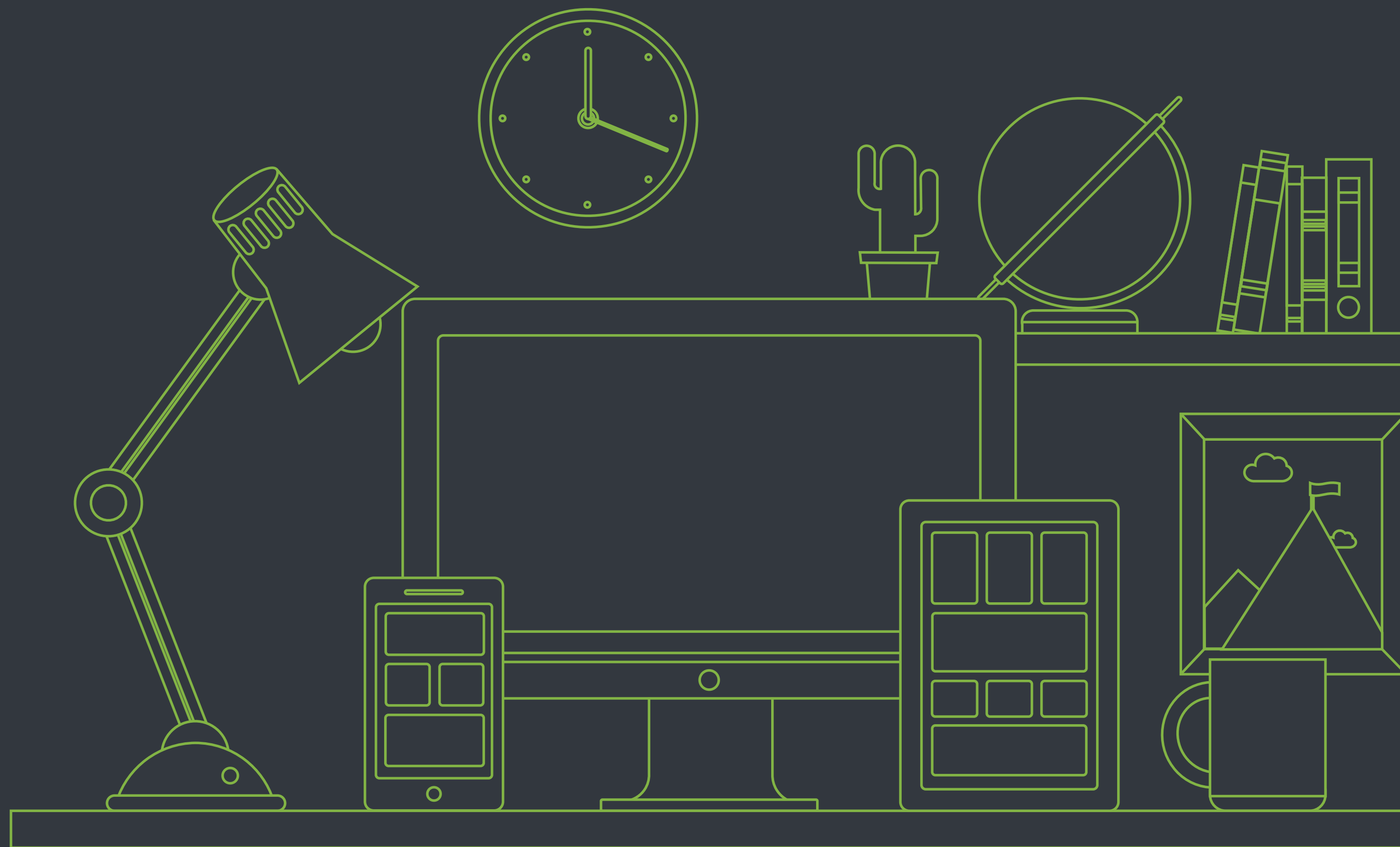
AGENDA

TRENDS

Microservices

Open & Inner Source

Distributed Teams

Time to Market

Microsoft
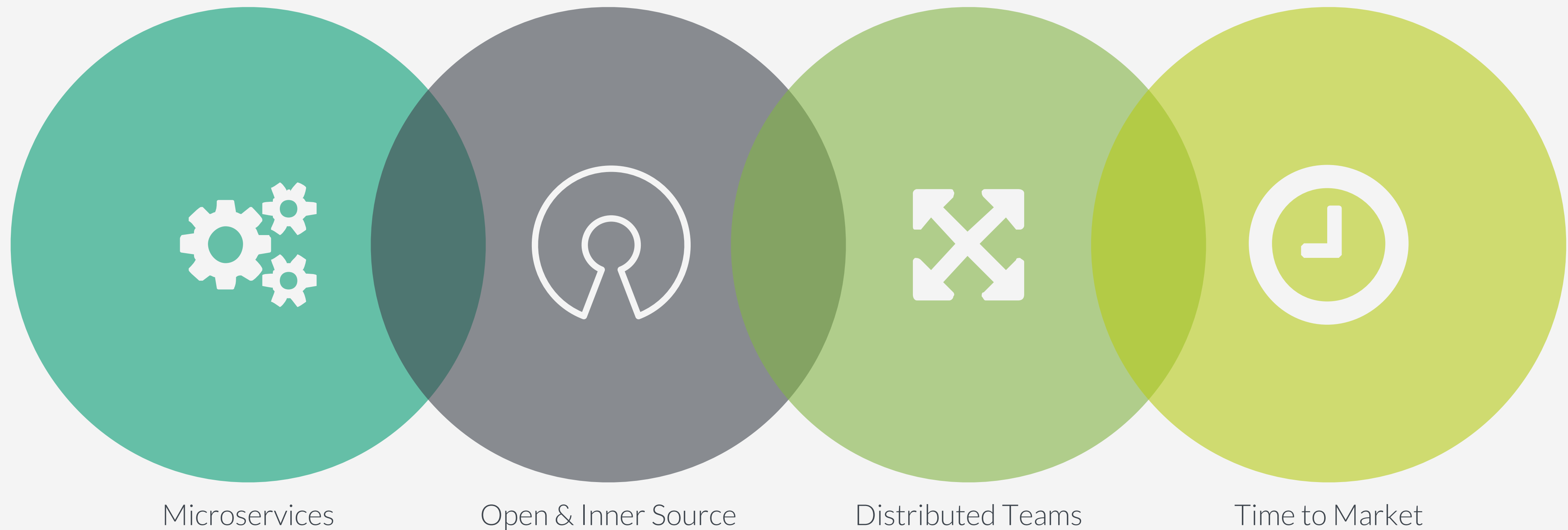
WHAT IS A DEV ENVIRONMENT?

WHAT IS A DEV ENVIRONMENT?

Editor

Source

WHAT IS A DEV ENVIRONMENT?

Editor

Source

Runtimes

WHAT IS A DEV ENVIRONMENT?

Editor

Debugger

Source

Runtimes

Microsoft

WHAT IS A DEV ENVIRONMENT?

Editor

Debugger

Source

Runtimes

Packages

WHAT IS A DEV ENVIRONMENT?

Editor

Debugger

Source

Runtimes

Packages

Tools

Microsoft

WHAT IS A DEV ENVIRONMENT?

Editor

Source

Runtimes

Debugger

Packages

Tools

Terminal

Microsoft

WHAT IS A DEV ENVIRONMENT?

Editor

Terminal

Debugger

Source

Runtimes

Packages

Tools

Extensions

Microsoft

WHAT IS A DEV ENVIRONMENT?

Editor

Debugger

Terminal

Source

Runtimes

Packages

Tools

Config

Extensions

Microsoft

WHAT IS VS ONLINE?

MANAGED ENVIRONMENTS FOR ANY PROJECT

Fully-managed,
on-demand dev environments that
dramatically reduce setup and
maintenance

FEEL AT HOME EVEN WHEN AWAY

Environment requirements are
auto-detected, but can be
configured, and your settings,
themes, Git identity, and dotfiles
are roamed so the experience
looks and feels like local
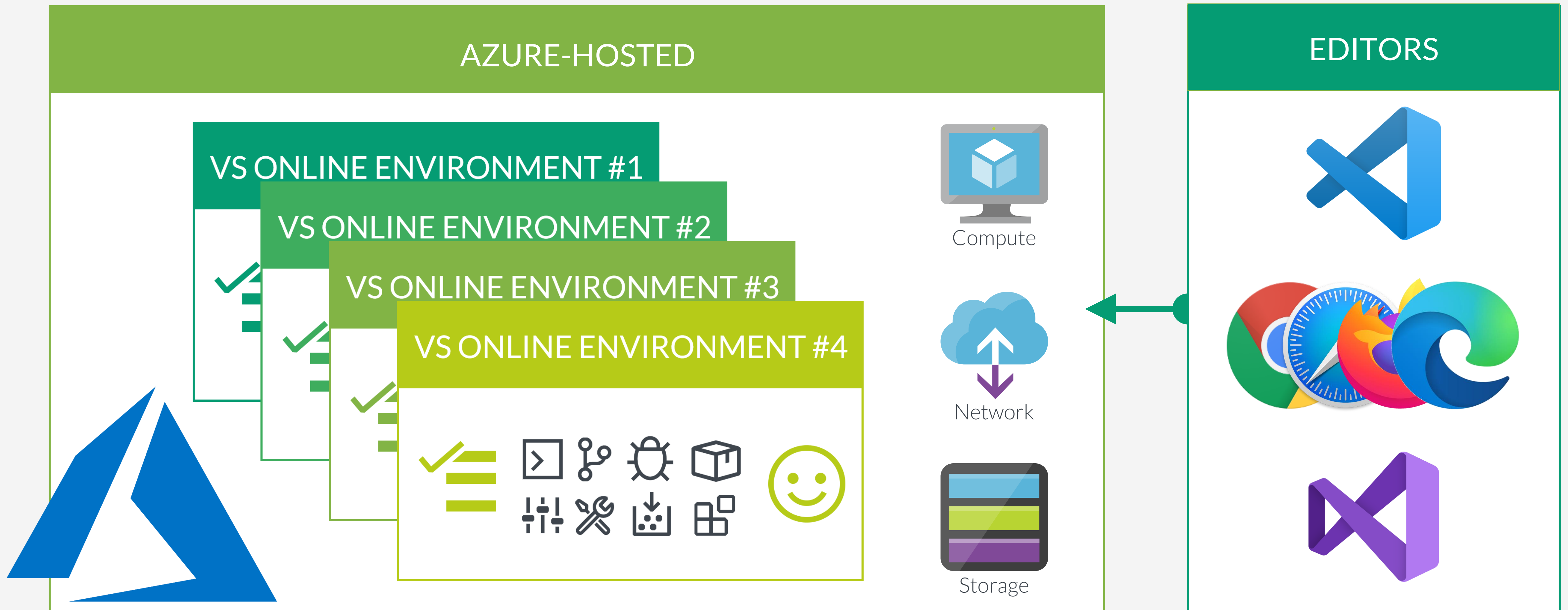
DEVELOP FROM ANYWHERE

Connect from anywhere:
Visual Studio, Visual Studio Code,
browser-based companion editor

SUPERCHARGED COLLABORATIVE DEVELOPMENT

Fully collaborative environment,
complete with
AI-assisted development support

Microsoft

VISUAL STUDIO ONLINE

AZURE-HOSTED

VS ONLINE ENVIRONMENT #1

VS ONLINE ENVIRONMENT #2

VS ONLINE ENVIRONMENT #3

VS ONLINE ENVIRONMENT #4

Compute

Network

Storage

EDITORS

Microsoft

VISUAL STUDIO ONLINE COMPUTE

1

AZURE HOSTED
Environments are hosted in Azure,
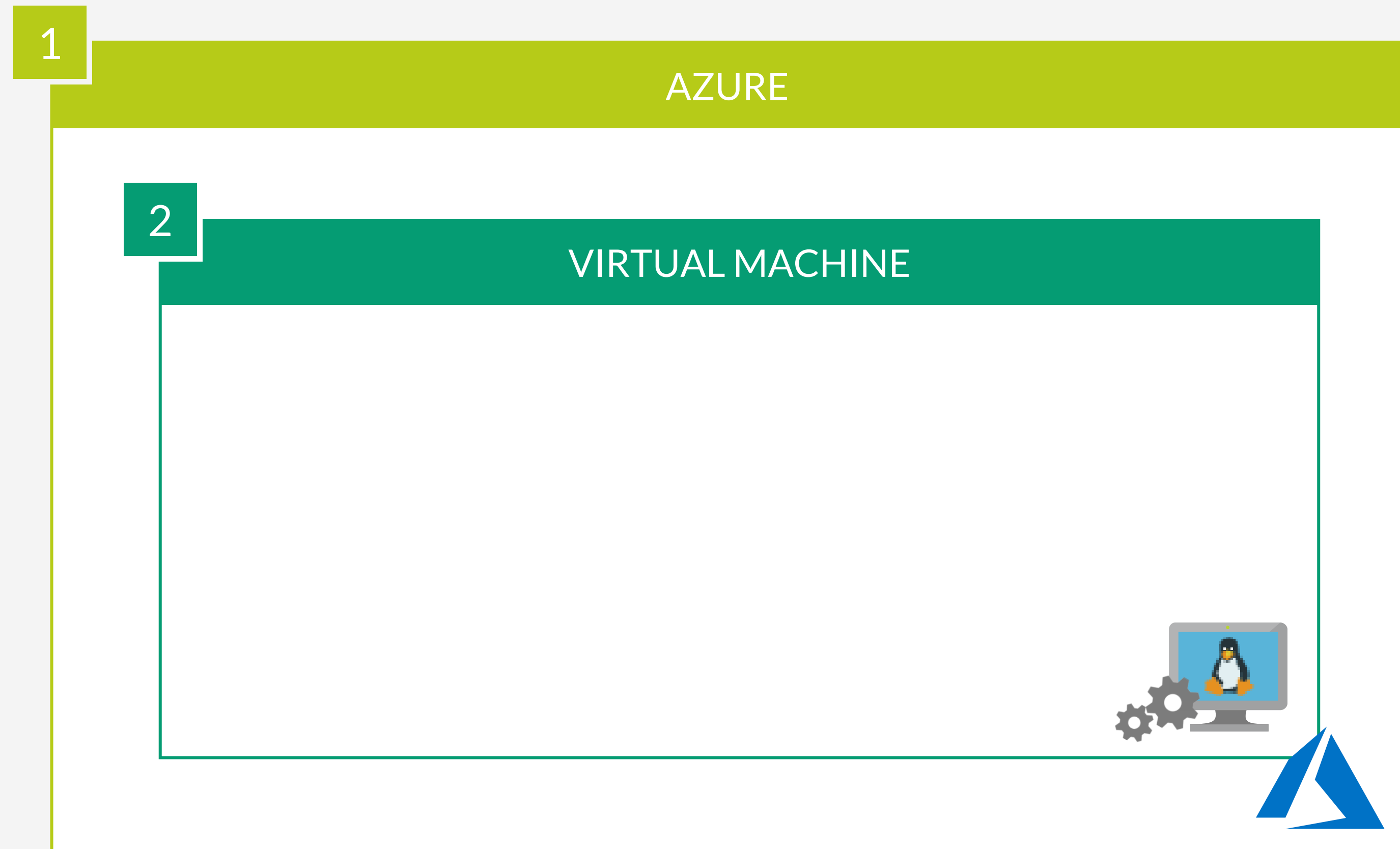the most trusted cloud.

1

AZURE

Microsoft

VISUAL STUDIO ONLINE COMPUTE

1 **AZURE HOSTED**
Environments are hosted in Azure, the most trusted cloud.

2 **VIRTUAL MACHINE ISOLATION**
Each environment runs on a dedicated VM which is automatically suspended and deleted when not in use to reduce costs.
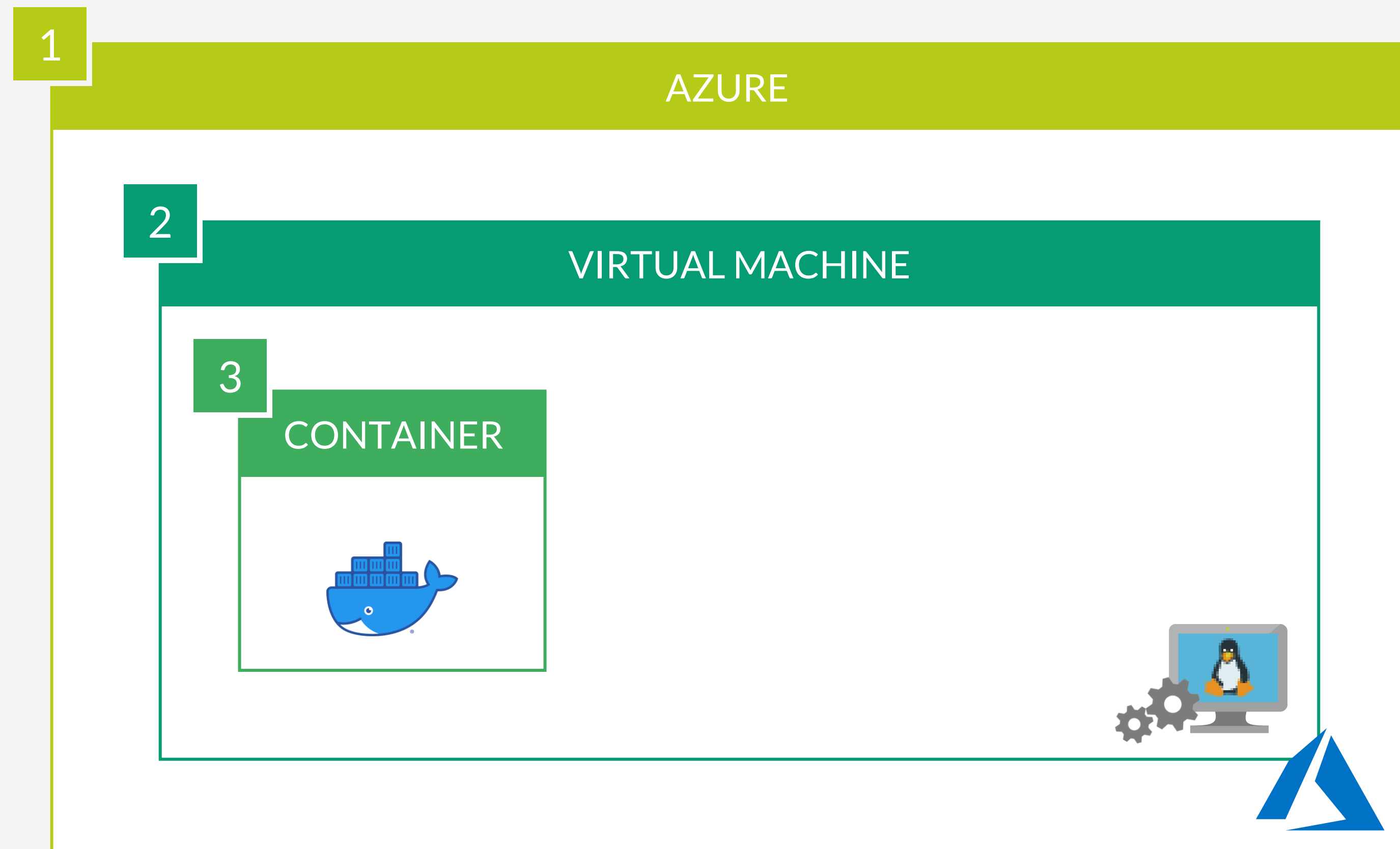
1 AZURE

2 VIRTUAL MACHINE

Microsoft

VISUAL STUDIO ONLINE COMPUTE

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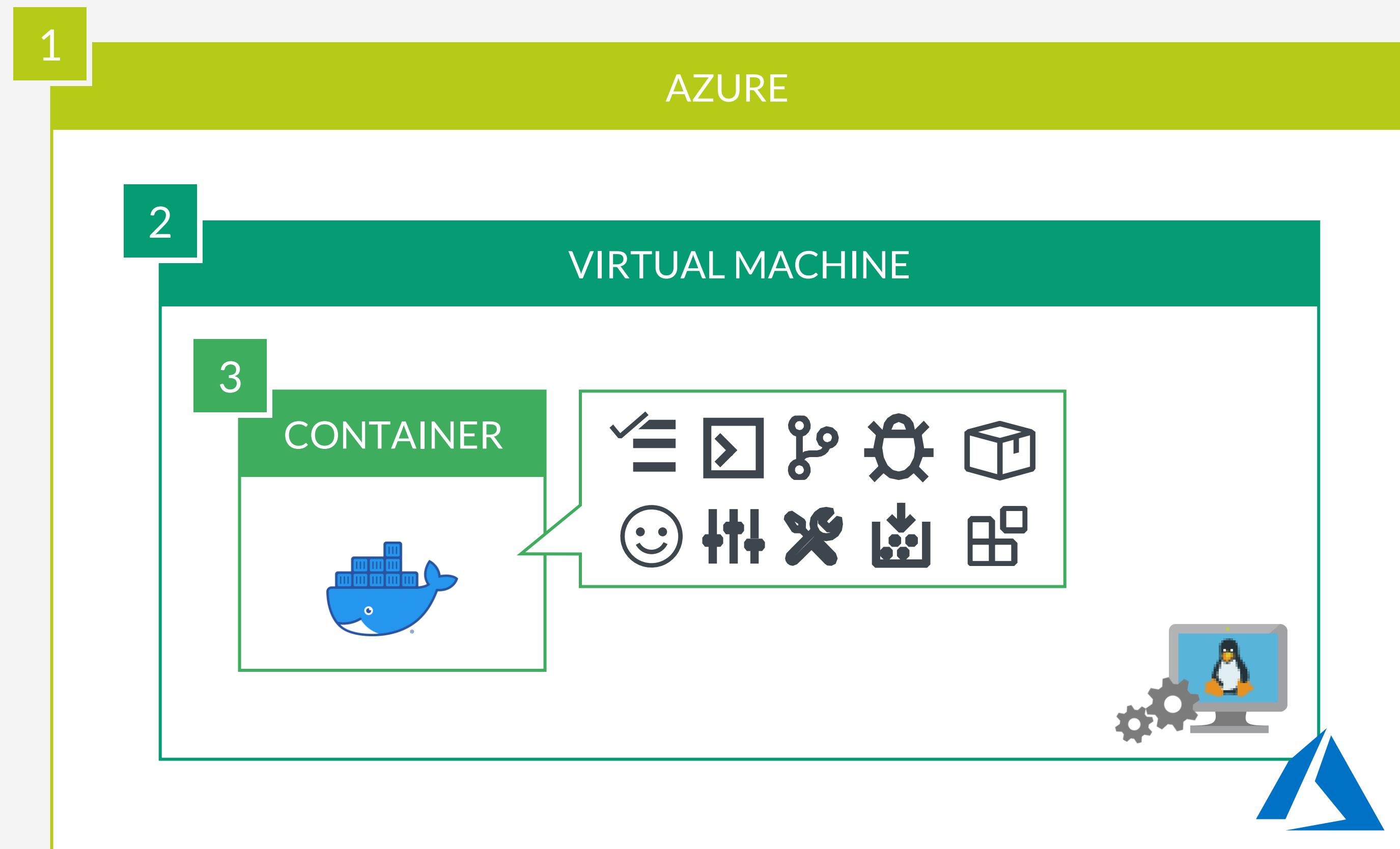Each environment runs on a dedicated VM which is automatically suspended and deleted when not in use to reduce costs.

3 **ENVIRONMENT CUSTOMIZATION**
Environments run in containers based on our default image, or your own custom Dockerfile or image.

1 AZURE

2 VIRTUAL MACHINE

3 CONTAINER

Microsoft

VISUAL STUDIO ONLINE COMPUTE

1 **AZURE HOSTED**
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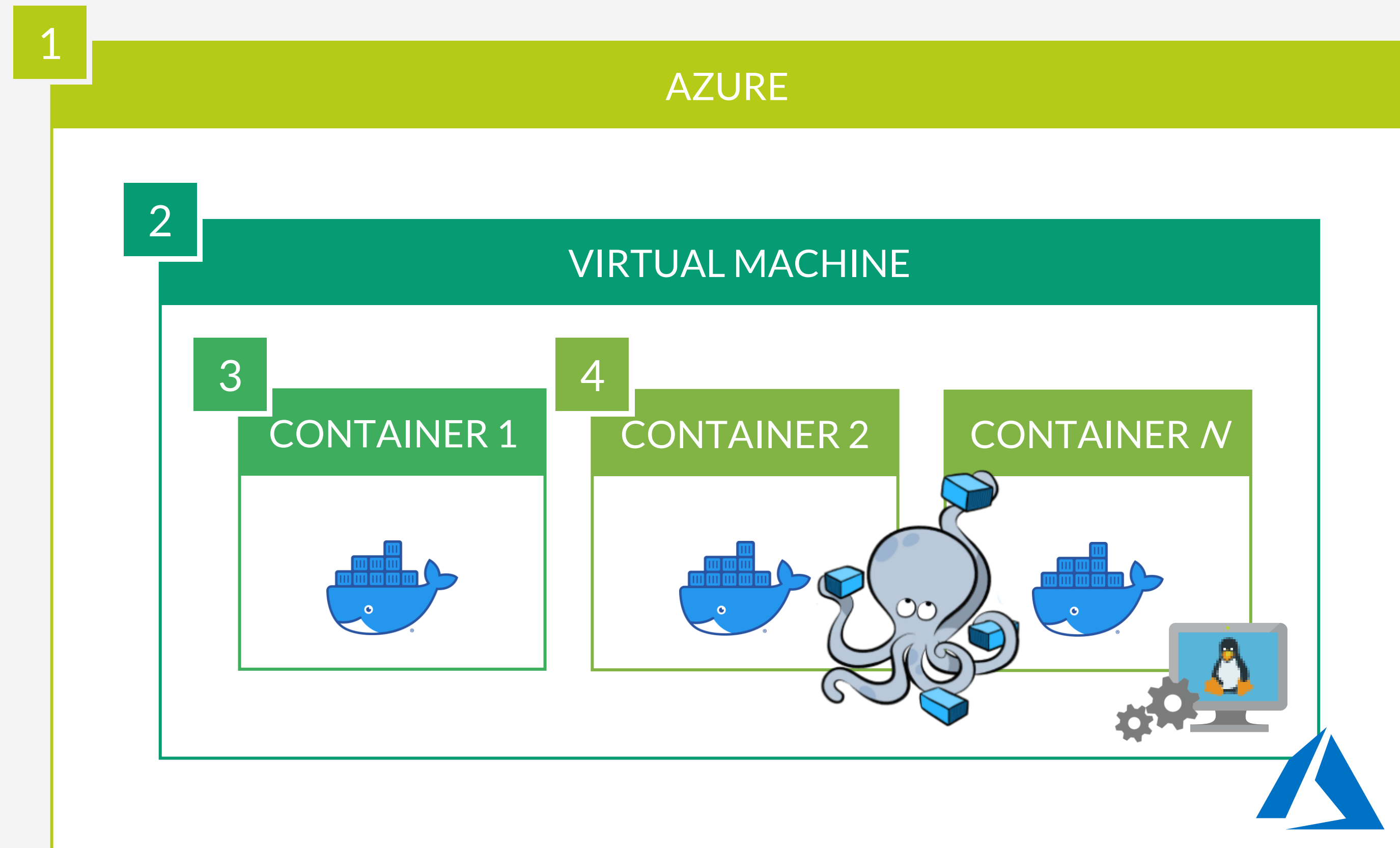**1** AZURE

2 VIRTUAL MACHINE

3 CONTAINER

Microsoft

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3 **ENVIRONMENT CUSTOMIZATION**
Environments run in containers based on our default image, or your own custom Dockerfile or image.

4 **COMPOSED ENVIRONMENTS**
Compose together complex development environments with Docker Compose support.*

1 AZURE

2 VIRTUAL MACHINE

3 CONTAINER 1

4 CONTAINER 2

CONTAINER *N*

Microsoft

VISUAL STUDIO ONLINE NETWORK

1 **NO PUBLIC IP ADDRESS**
Environments are not addressable via a public IP.

1

IP ADDRESS

AZURE

VIRTUAL MACHINE

CONTAINER 1

CONTAINER 2

CONTAINER *N*

Microsoft

VISUAL STUDIO ONLINE NETWORK

1 **NO PUBLIC IP ADDRESS**
Environments are not addressable via a public IP.

2 **NO INBOUND TRAFFIC**
Environments make outbound-only connections to Azure Relay and are:
- ✔ End-to-end Encrypted
- ✔ Authenticated
- ✔ Authorized

1 IP ADDRESS

AZURE

VIRTUAL MACHINE

2 RELAY

CONTAINER 1

CONTAINER 2

CONTAINER N

Microsoft

VISUAL STUDIO ONLINE NETWORK
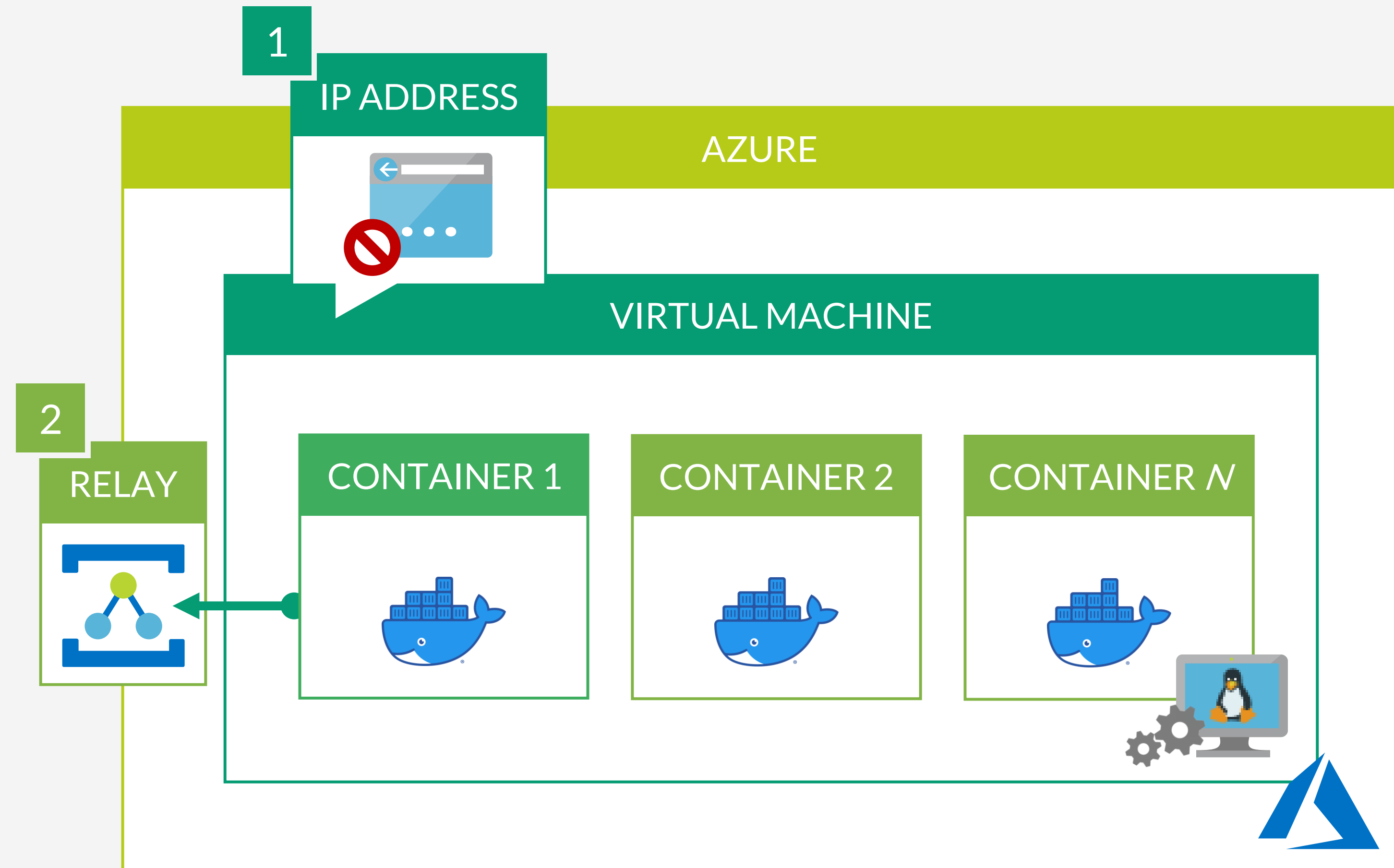
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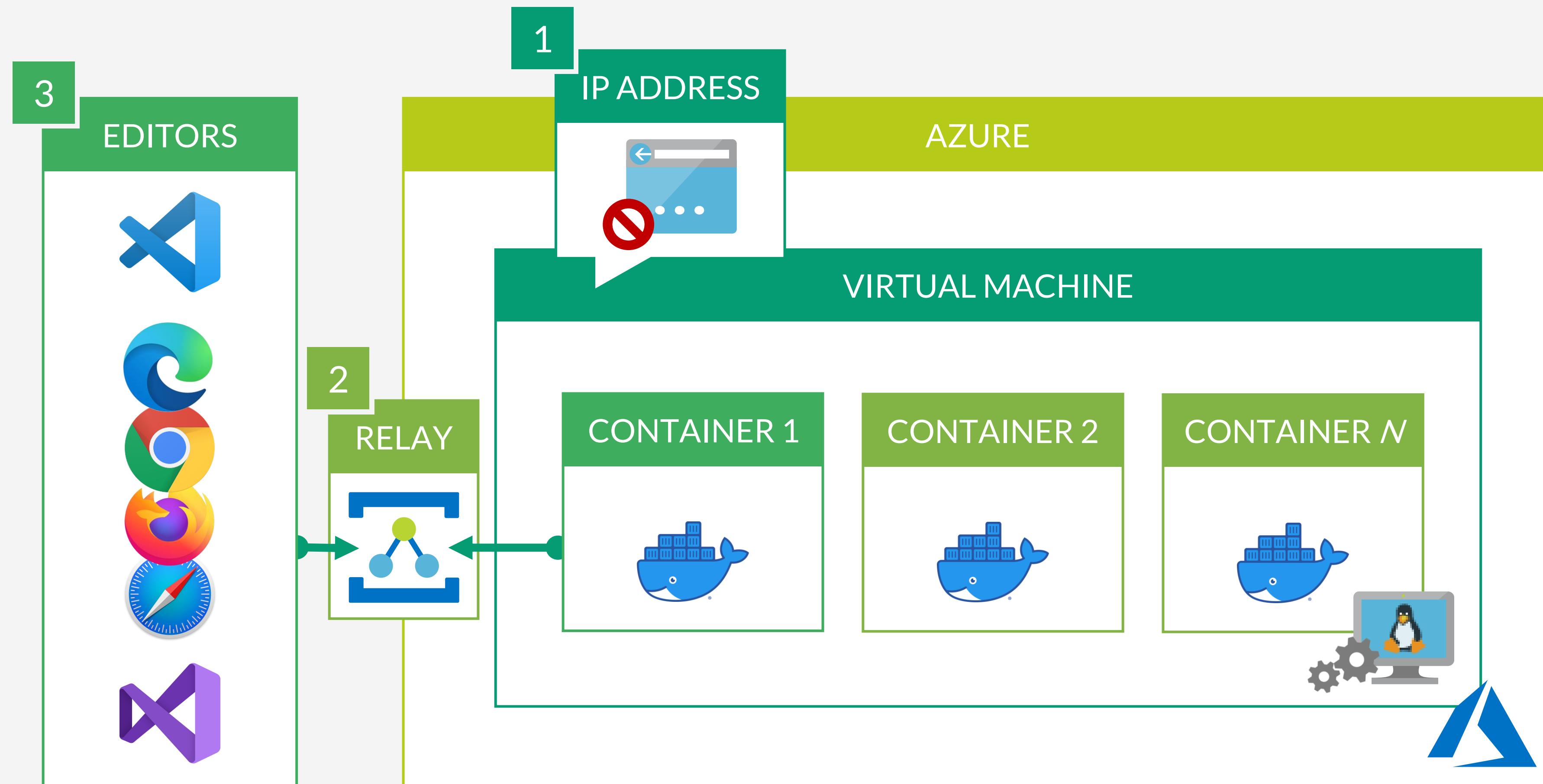Environments make outbound-only connections to Azure Relay and are:
- ✔ End-to-end Encrypted
- ✔ Authenticated
- ✔ Authorized

3 **CONNECTED CLIENTS**
Clients also leverage Azure Relay to eliminate intrusive changes to firewall and network infrastructure.

3 EDITORS

1 IP ADDRESS

AZURE

VIRTUAL MACHINE

2 RELAY

CONTAINER 1

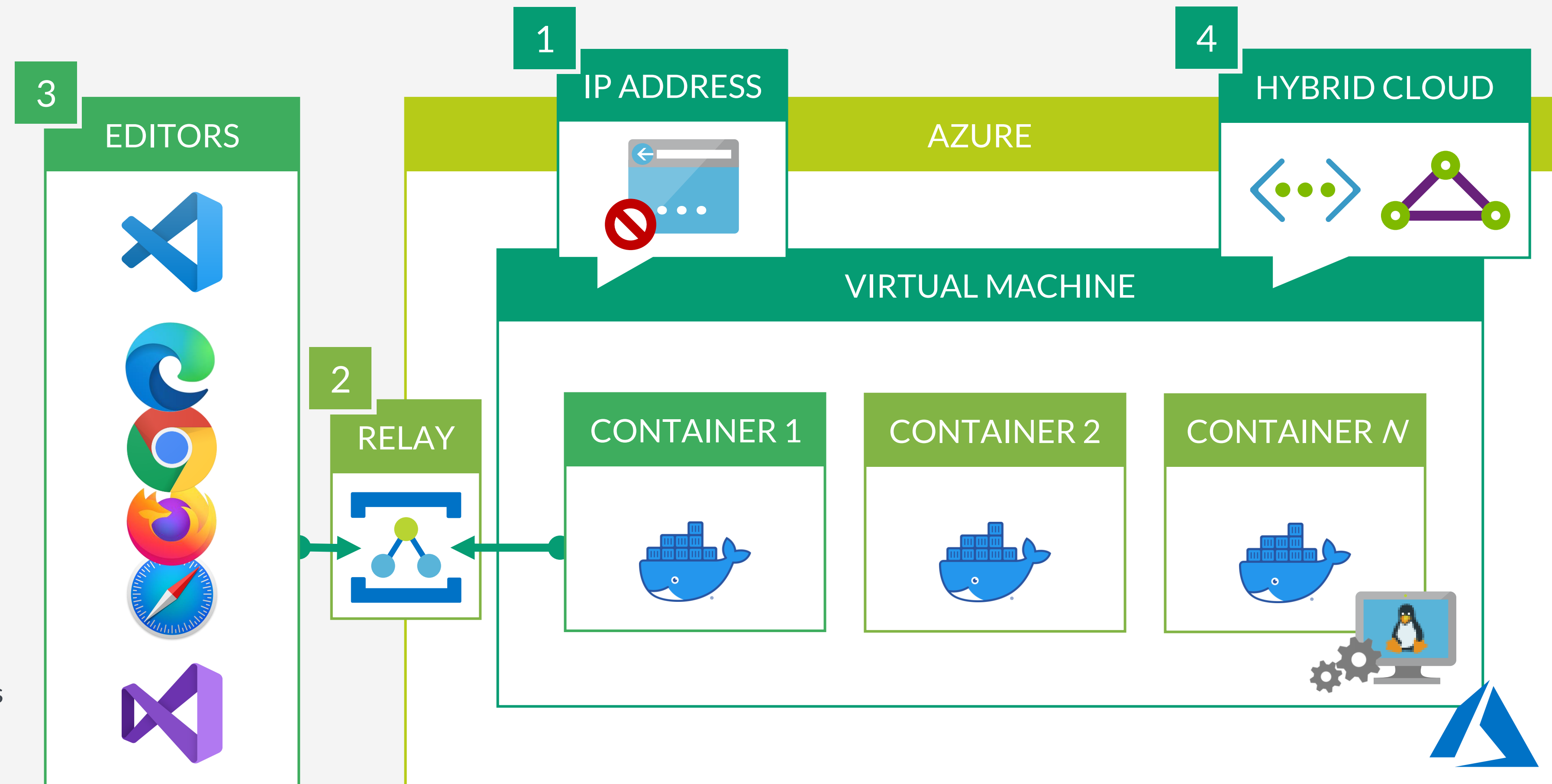CONTAINER 2

CONTAINER N

Microsoft

VISUAL STUDIO ONLINE NETWORK

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- ✔ End-to-end Encrypted
- ✔ Authenticated
- ✔ Authorized

3 CONNECTED CLIENTS
Clients also leverage Azure Relay to eliminate intrusive changes to firewall and network infrastructure.

4 HYBRID CLOUD
Private virtual networks and connections (via ExpressRoute).*

3 EDITORS

1 IP ADDRESS

AZURE

4 HYBRID CLOUD

VIRTUAL MACHINE

2 RELAY

CONTAINER 1

CONTAINER 2

CONTAINER N

VISUAL STUDIO ONLINE STORAGE

1

SOURCE OF TRUTH
VS Online leverages existing Git
repositories as the source of truth.

AZURE

VIRTUAL MACHINE

CONTAINER

1 SOURCE

git

DISK

VISUAL STUDIO ONLINE STORAGE

1 **SOURCE OF TRUTH**
VS Online leverages existing Git repositories as the source of truth.

2 **DEDICATED STORAGE**
Each environment runs in its own dedicated and isolated storage account, which is mounted to the VM when active.

AZURE

VIRTUAL MACHINE

CONTAINER

1 SOURCE

2 DISK

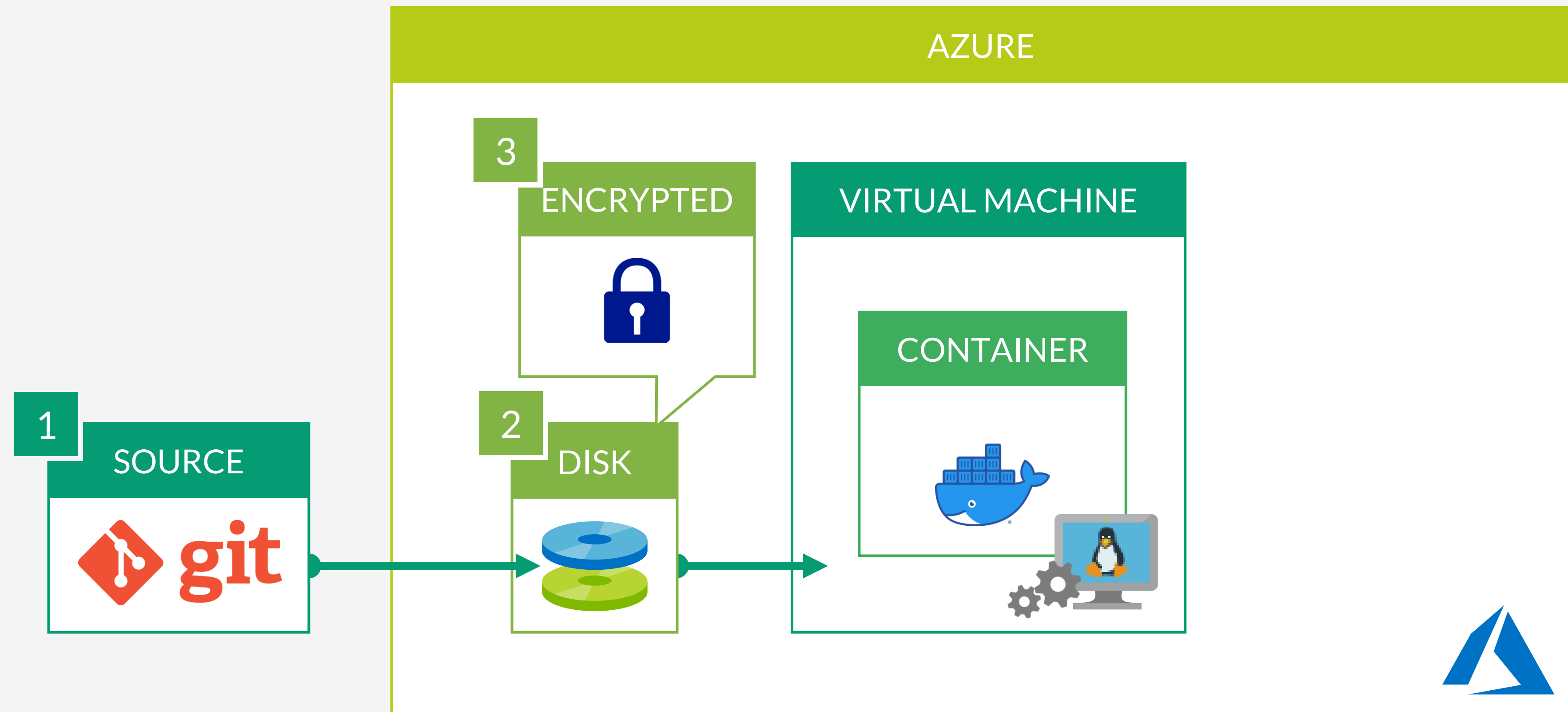Microsoft

VISUAL STUDIO ONLINE STORAGE

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Each environment runs in its own dedicated and isolated storage account, which is mounted to the VM when active.

3 **ENCRYPTED AT REST**
Environment storage is encrypted with Microsoft managed keys to protect data.

AZURE

3 ENCRYPTED

2 DISK

1 SOURCE

VIRTUAL MACHINE

CONTAINER

Microsoft

VISUAL STUDIO ONLINE STORAGE

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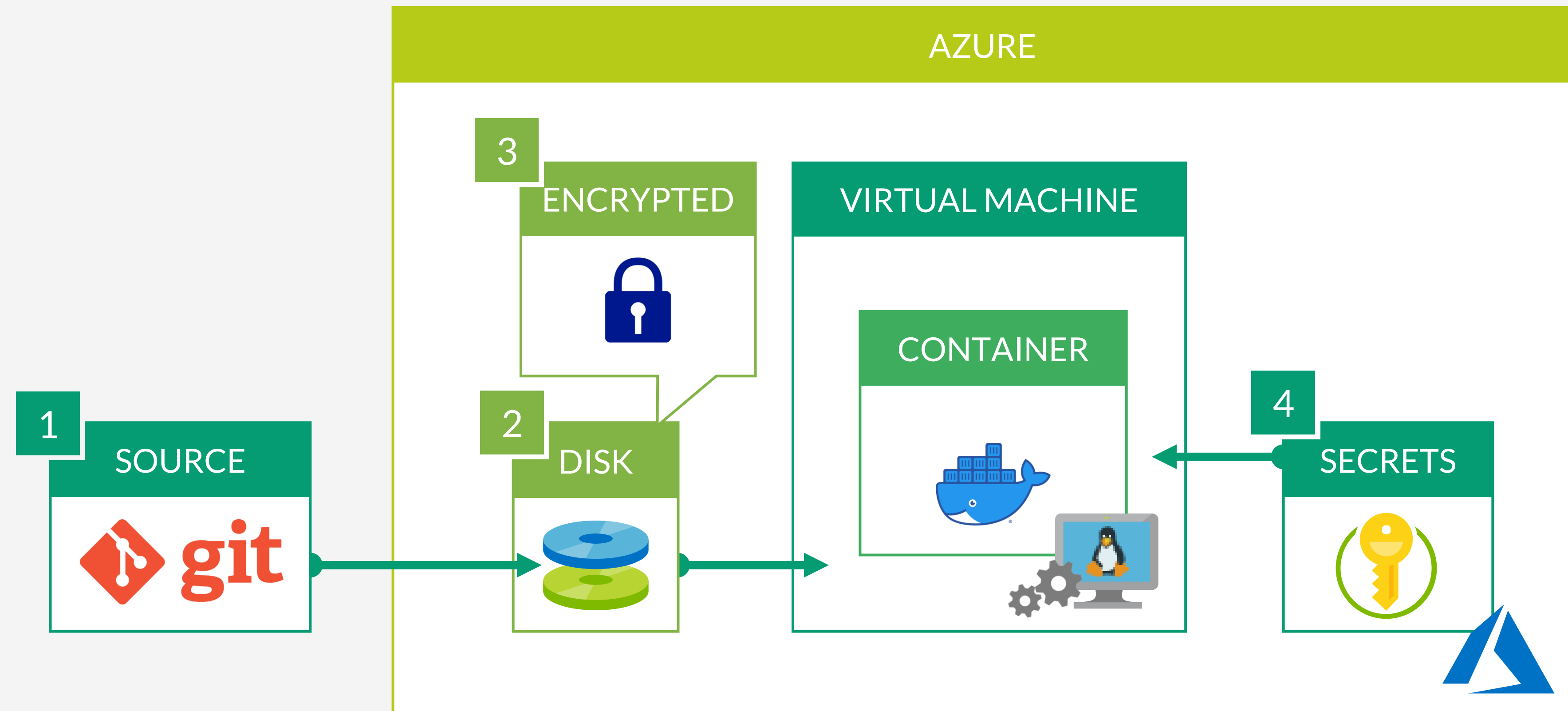
3 **ENCRYPTED AT REST**
Environment storage is encrypted with Microsoft managed keys to protect data.

4 **SAFEGAURDED SECRETS**
Configured variables and keys are stored within Azure Key Vault and exposed within the container.*

AZURE

3 ENCRYPTED

VIRTUAL MACHINE

CONTAINER

1 SOURCE

2 DISK

4 SECRETS

Microsoft

* COMING SOON!

VISUAL STUDIO ONLINE PERMISSIONS

1 **FLEXIBLE ORGANIZATION**
Use Azure Subscriptions and Resource Groups to organize across cost centers, divisions and users.

1 AZURE

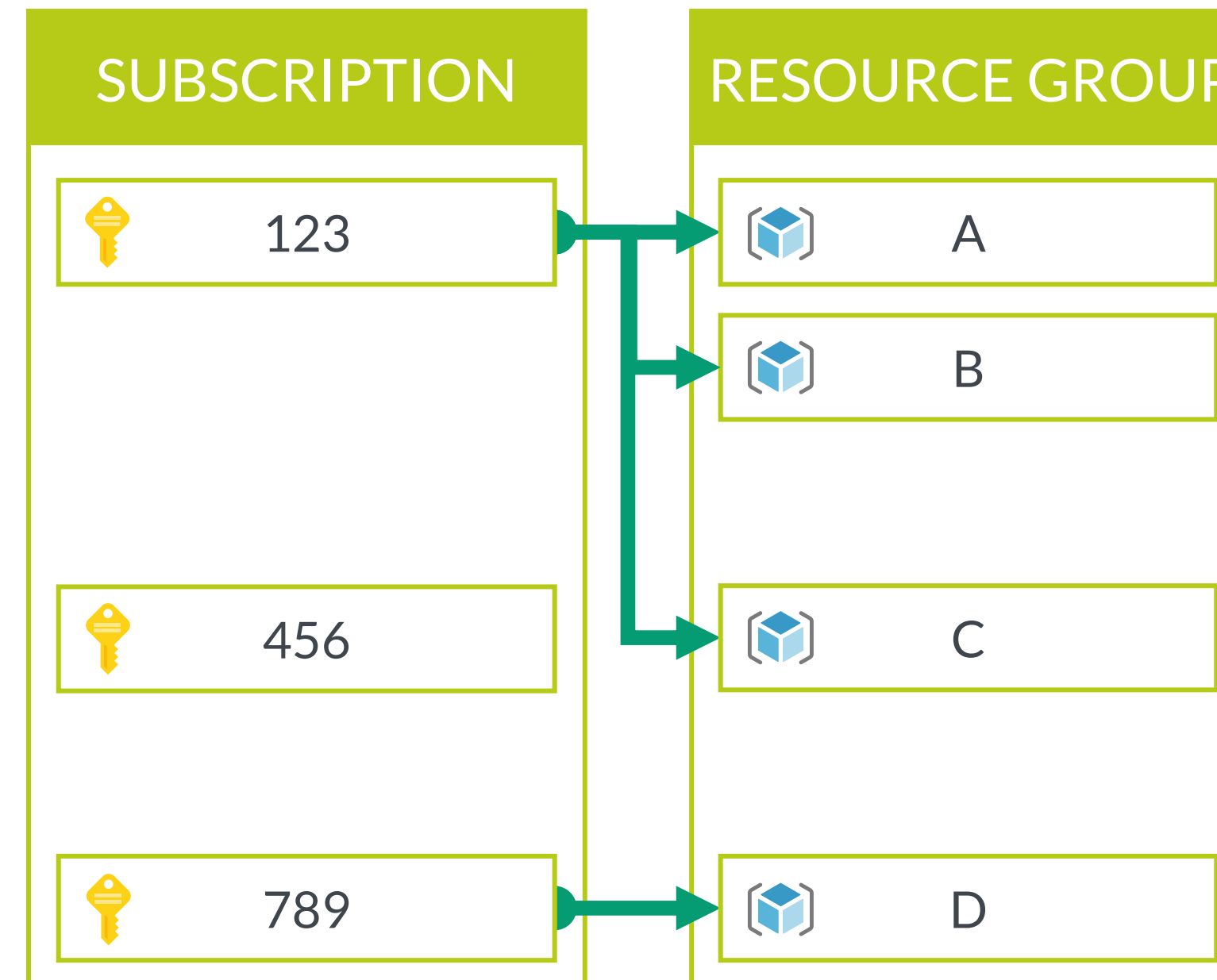| SUBSCRIPTION	RESOURCE GROUP
123	A
	B
456	C
789	D

Microsoft

VISUAL STUDIO ONLINE PERMISSIONS

1 **FLEXIBLE ORGANIZATION**
Use Azure Subscriptions and Resource Groups to organize across cost centers, divisions and users.

2 **CONTROL WITH PLANS**
VS Online Plans group environments together to allow simple role-based access control and policy enforcement.*

RBAC

1 AZURE

2

SUBSCRIPTION	RESOURCE GROUP	VSO PLAN
🔑 123	A	Plan 1
	B	Plan 2
🔑 456	C	Plan 3
🔑 789	D	Plan 4

VISUAL STUDIO ONLINE PERMISSIONS

1 FLEXIBLE ORGANIZATION
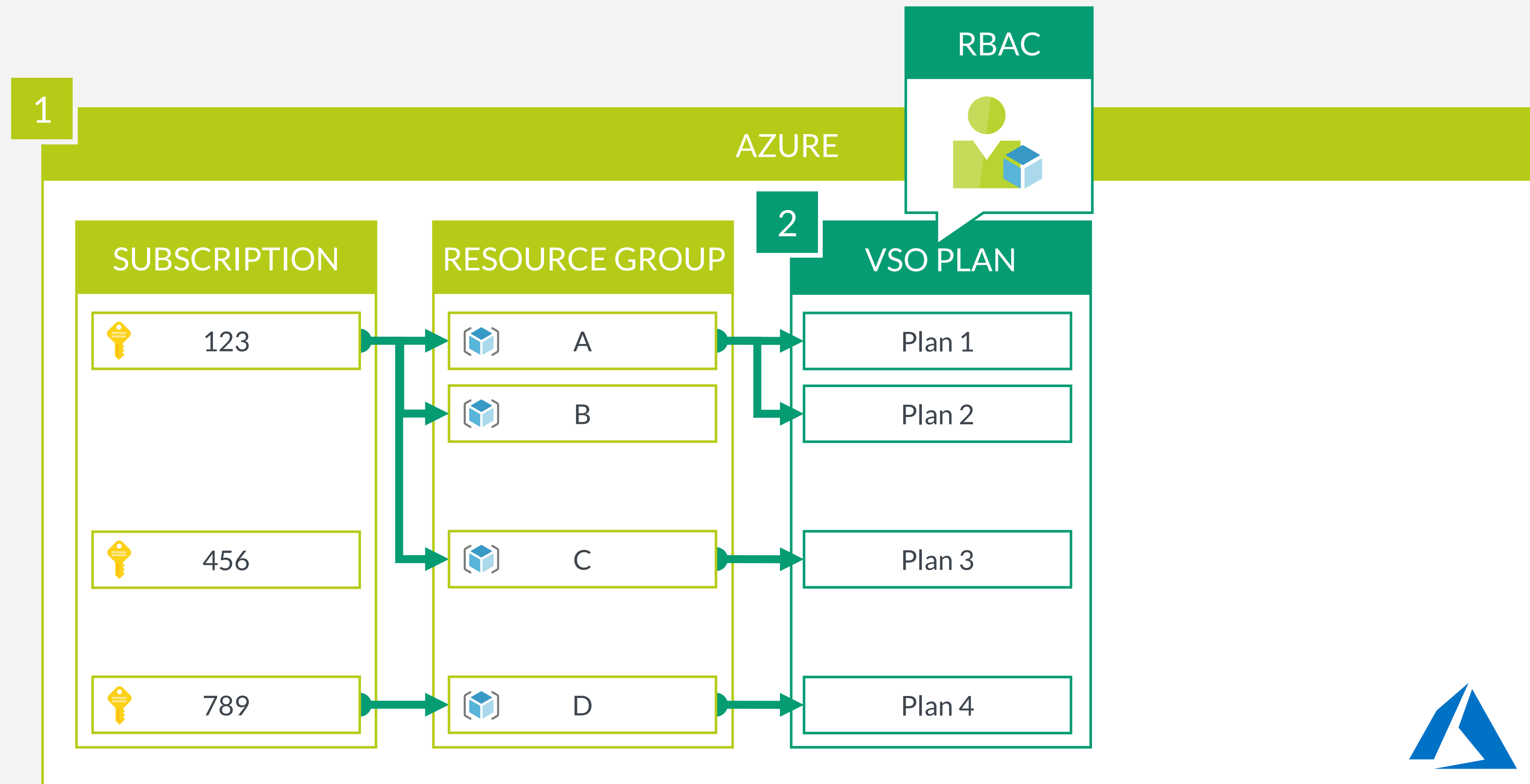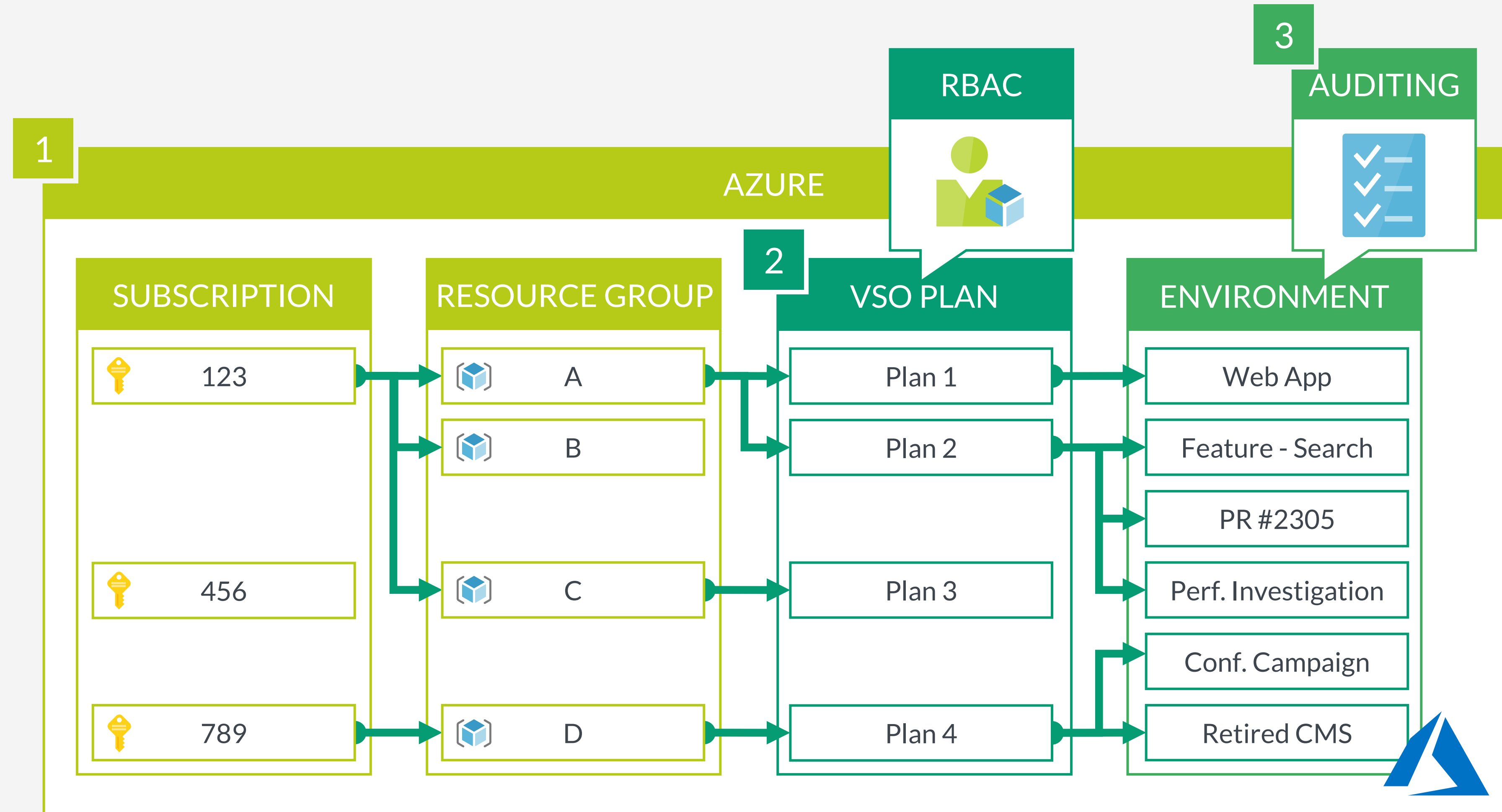Use Azure Subscriptions and Resource Groups to organize across cost centers, divisions and users.

2 CONTROL WITH PLANS
VS Online Plans group environments together to allow simple role-based access control and policy enforcement.*

3 AUDIT LOGS
Creation, deletion and access to environments is logged for increased transparency.*

3 AUDITING

RBAC

1 AZURE

2

SUBSCRIPTION	RESOURCE GROUP	VSO PLAN	ENVIRONMENT
123	A	Plan 1	Web App
	B	Plan 2	Feature - Search
			PR #2305
456	C	Plan 3	Perf. Investigation
			Conf. Campaign
789	D	Plan 4	Retired CMS

VISUAL STUDIO ONLINE CONFIG

1

"GIT-OPS"
Configuration is versioned in Git. Git credentials are proxied from the client machine, not stored in the environment.

1

SOURCE

ENV CONFIG

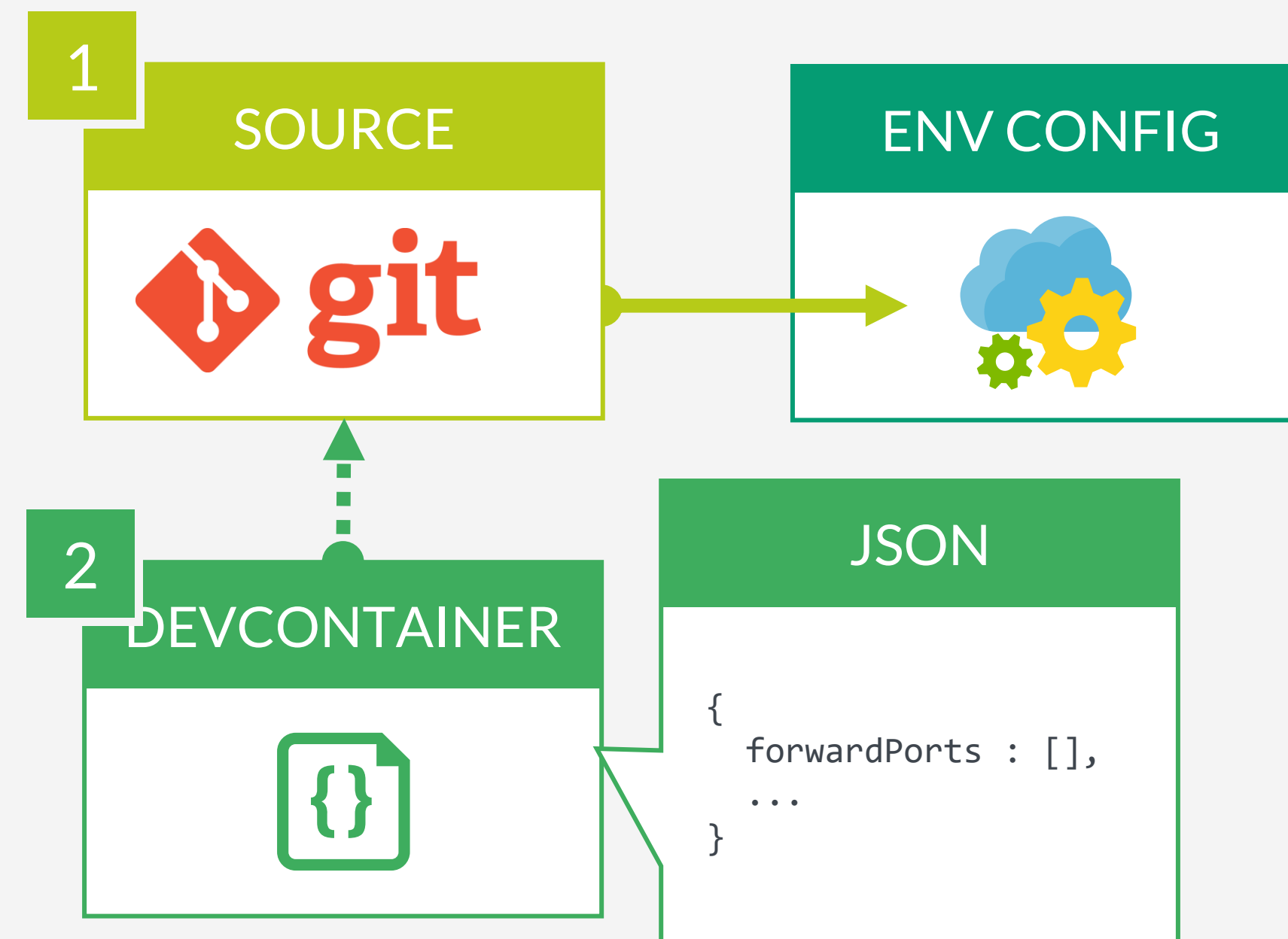Microsoft

VISUAL STUDIO ONLINE CONFIG

1 **"GIT-OPS"**
Configuration is versioned in Git. Git credentials are proxied from the client machine, not stored in the environment.

2 **SECURE BY DEFAULT**
Configure `devcontainer.json` to expose ports to client machine and customize environment container/user.

1 SOURCE

ENV CONFIG

2 DEVCONTAINER

JSON

```
{
    forwardPorts : [],
    ...
}
```

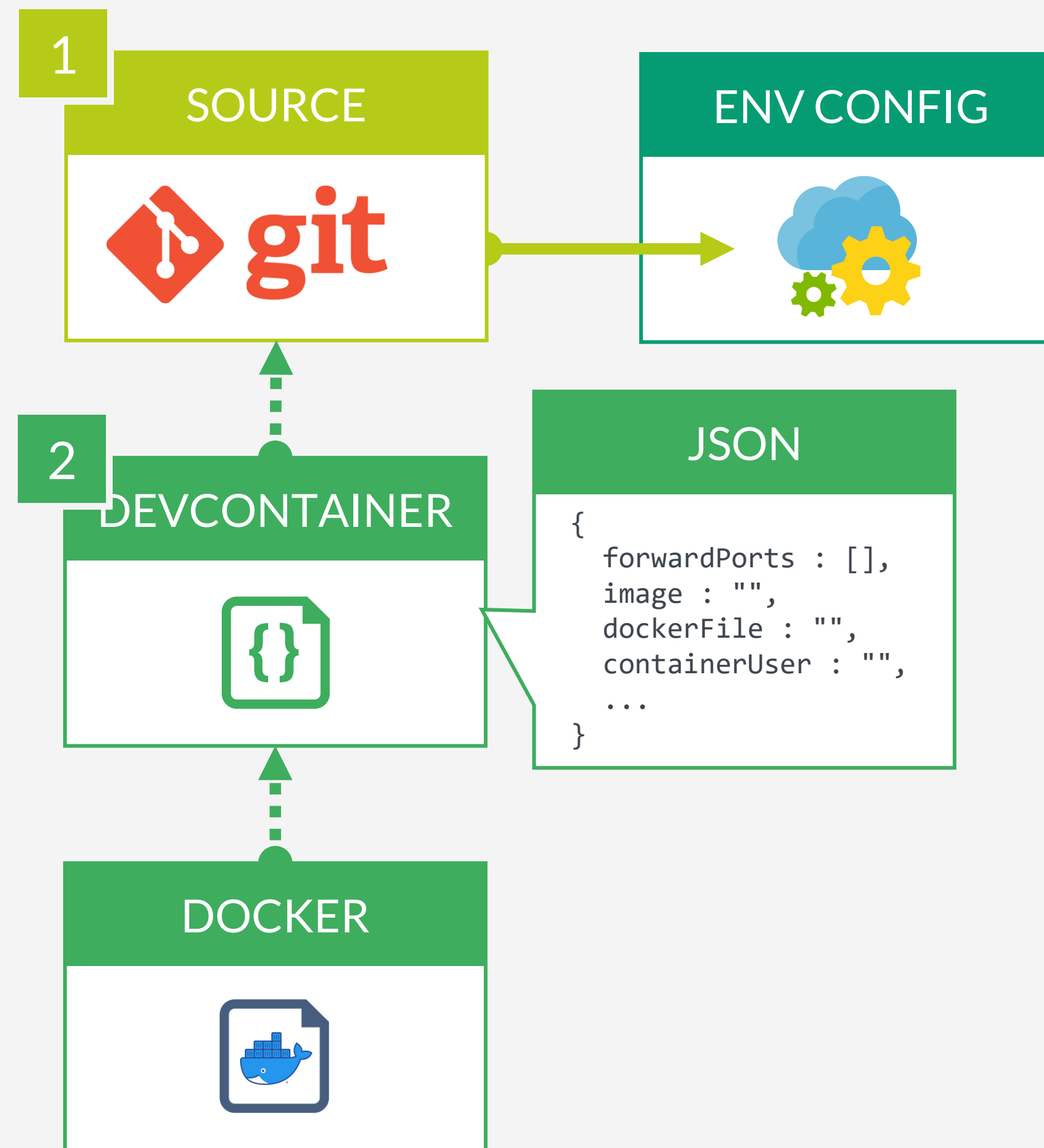Microsoft

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2 **SECURE BY DEFAULT**
Configure `devcontainer.json` to expose ports to client machine and customize environment container/user.

1

SOURCE

ENV CONFIG

2

DEVCONTAINER

JSON

```
{
    forwardPorts : [],
    image : "",
    dockerFile : "",
    containerUser : "",
    ...
}
```

DOCKER

VISUAL STUDIO ONLINE CONFIG

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2 **SECURE BY DEFAULT**
Configure `devcontainer.json` to expose ports to client machine and customize environment container/user.

3 **COST CONTROL**
Select the virtual machine (Basic, Standard, Premium or GPU) and the auto-suspension policy per environment.

1 SOURCE

ENV CONFIG

3 CONTROL

2 DEVCONTAINER

DOCKER

■■ Microsoft

VISUAL STUDIO ONLINE CONFIG

1 **"GIT-OPS"**
Configuration is versioned in Git. Git credentials are proxied from the client machine, not stored in the environment.
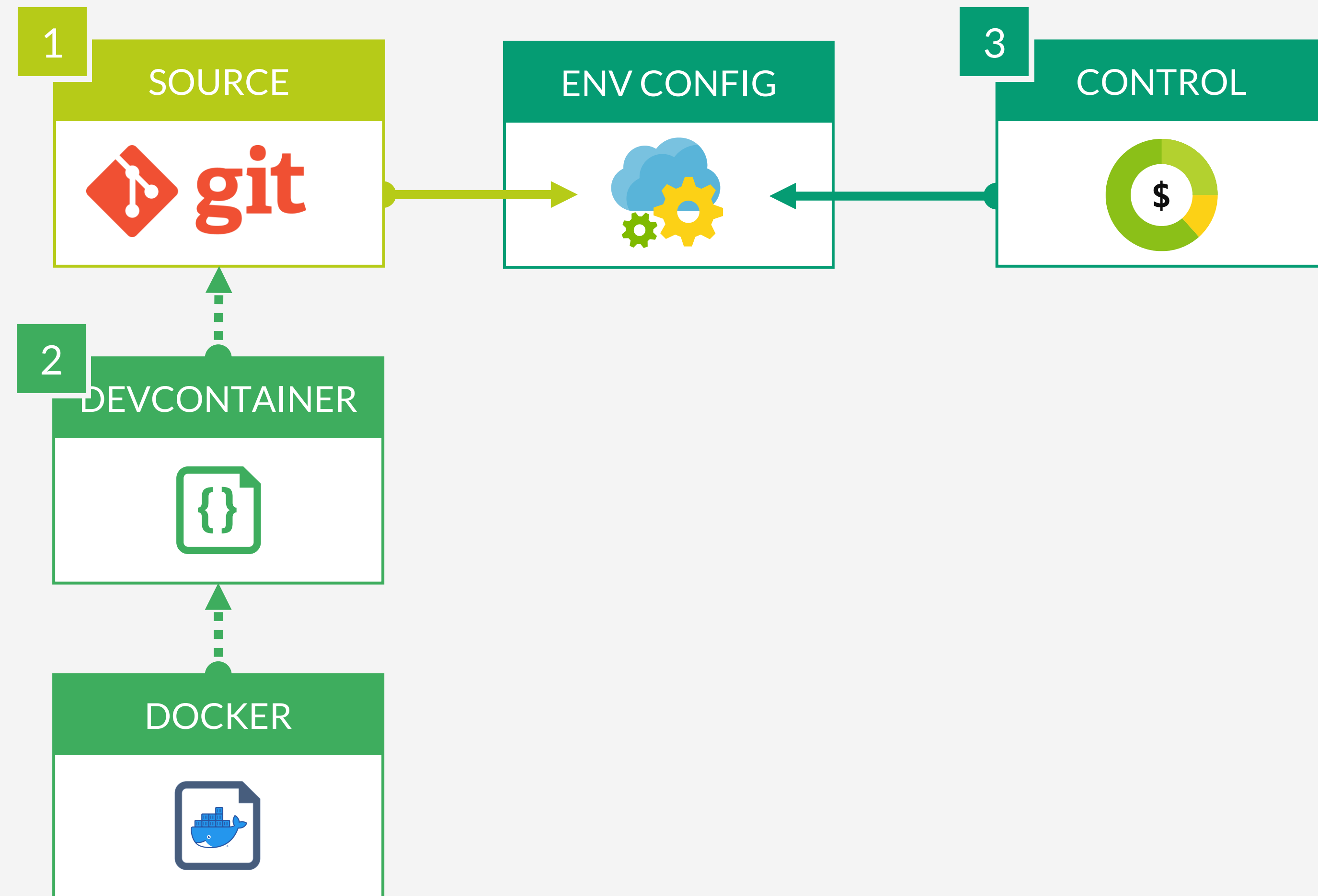
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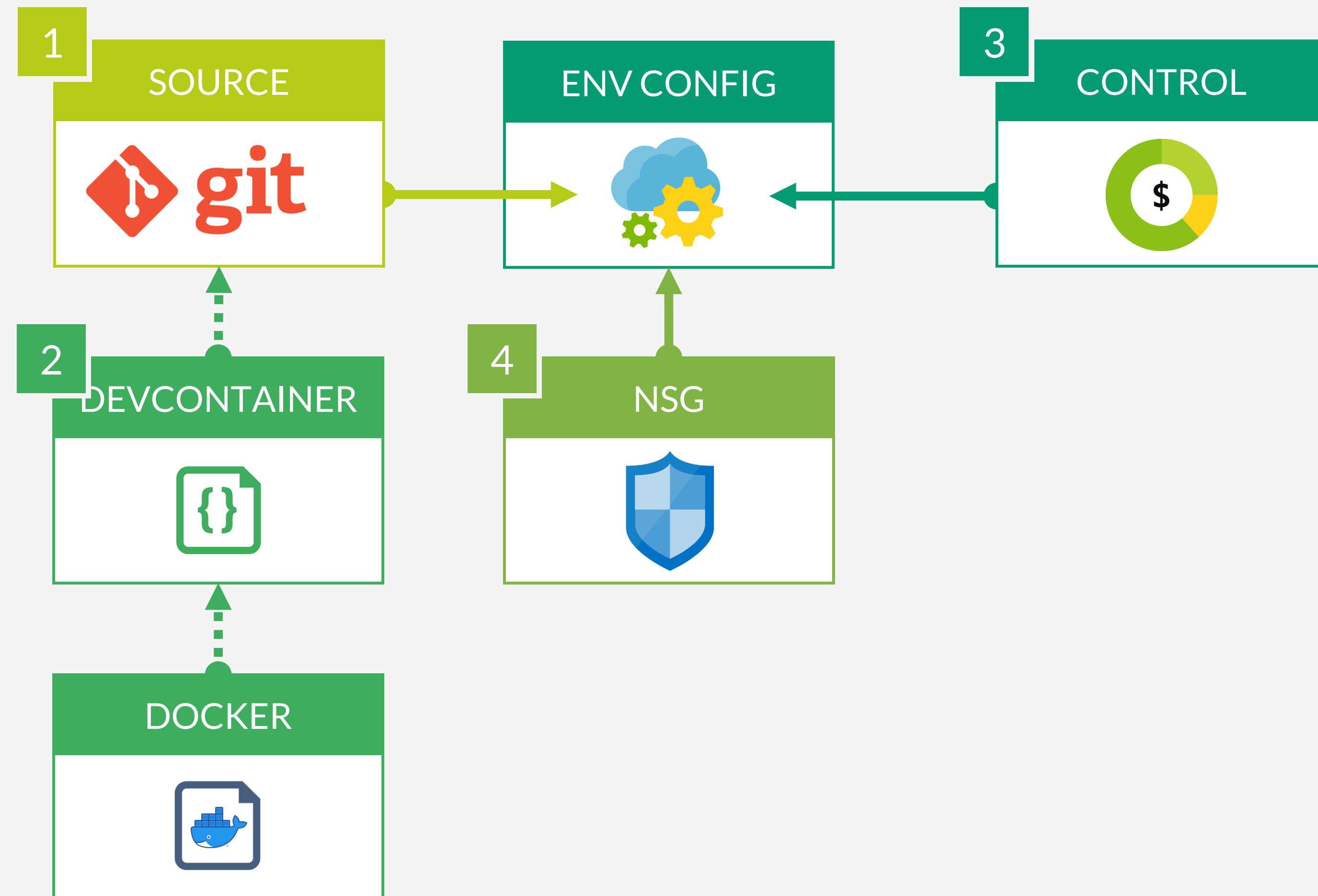
3 **COST CONTROL**
Select the virtual machine (Basic, Standard, Premium or GPU) and the auto-suspension policy per environment.

4 **NETWORK SECURITY GROUP**
Filter outbound network traffic by destination, protocol or port.*

1 SOURCE

3 CONTROL

ENV CONFIG

2 DEVCONTAINER

4 NSG

DOCKER

Microsoft

* COMING SOON!

VISUAL STUDIO ONLINE GEOGRAPHIES

UNITED KINGDOM*

EUROPE

UNITED STATES

ASIA PACIFIC

AUSTRALIA*

Microsoft

* COMING SOON!

VISUAL STUDIO ONLINE PRICING
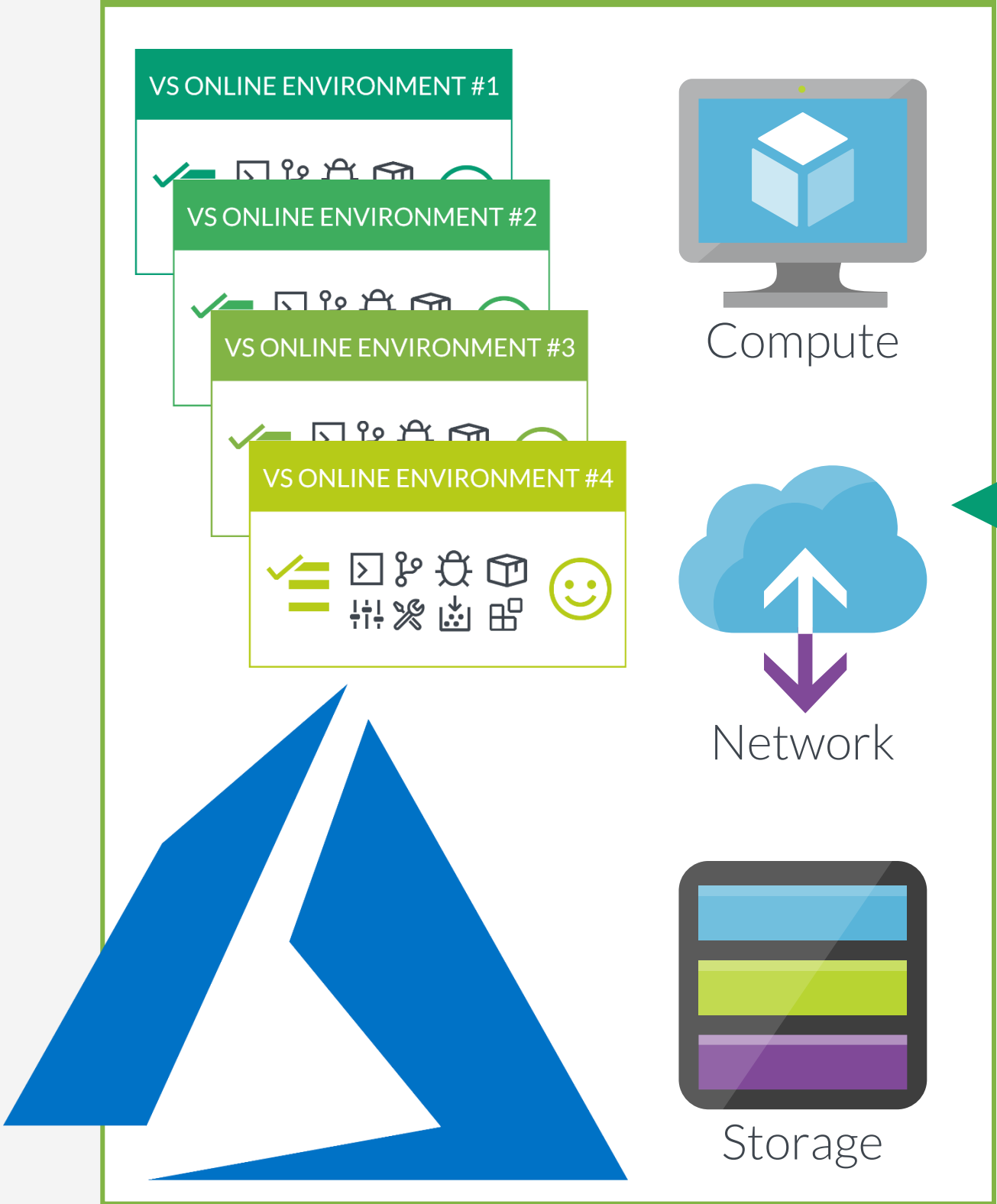
INSTANCE TYPES / HR

25 ¢ **BASIC**
CORES: 2
RAM: 4 GB
DISK: 64 GB SSD

46 ¢ **STANDARD**
CORES: 4
RAM: 8 GB
DISK: 64 GB SSD

88 ¢ **PREMIUM**
CORES: 8
RAM: 16 GB
DISK: 64 GB SSD

2.75 $ **GPU***
CORES: 6
RAM: 56 GB
GPU: 1 w/ 12 GB
DISK: 64 GB SSD

AZURE-HOSTED

VS ONLINE ENVIRONMENT #1
VS ONLINE ENVIRONMENT #2
VS ONLINE ENVIRONMENT #3
VS ONLINE ENVIRONMENT #4

Compute

Network

Storage

EDITORS

Microsoft

DEMO

ROADMAP

SPRING

SUMMER

FALL

WINTER

- Basic & GPU instances
- Sharable Plans
- Docker Compose support
- Secrets management
- VS Code Settings sync

- Windows environments*
- VS IDE support*

- General availability
- Offline environments
- Retention policies
- vNet Support
- Audit logging

- Windows environments*
- VS IDE support*

Microsoft

QUESTIONS

LEARN MORE

https://aka.ms/vso-online